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1 UNITED STATES DISTRICT COURT
2 NORTHERN DISTRICT OF CALIFORNIA
3 SAN JOSE DIVISION

4 IN RE iPHONE)
5)
6 APPLICATION LITIGATION.) No. 5:11-MD-02250-LHK
7)
8 _____)

9 CONFIDENTIAL - ATTORNEYS' EYES ONLY

10 VIDEOTAPED DEPOSITION OF DR. MANUEL EGELE

11 Wednesday, January 9, 2013
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22 REPORTED BY:
23 MICHELLE L. HALL, RMR
24 JOB NO: 56856
25

1 code mechanisms that developers can use to
2 access the UDID from iOS; correct?

3 MR. STAMPLEY: Are we still in
4 31?

5 MS. BERINGER: Generally, yes.

6 MR. STAMPLEY: Okay.

7 MS. BERINGER: But I'm not --

8 A. What was the question? Sorry.

9 Q. The question is -- it's not even a
10 question, so --

11 A. Okay.

12 Q. -- don't worry.

13 A. No answer then.

14 Q. Am I correct that developers can
15 include code in their applications that
16 requests a UDID from iOS?

17 A. That is correct.

18 Q. And to the extent that applications
19 request the UDID, that request is executed
20 through code inside the application; correct?

21 A. Technically, the code is executed by
22 the CPU of the device. But, yes, that's
23 correct.

24 Q. I'm sure I'm going to, you know,
25 bumble the technical terminology, but the point

1 is that the application contains code that
2 makes that request; correct?

3 A. That is correct.

4 Q. And the request is not made to Apple
5 the company or Apple servers, it is made to the
6 operating system on the device; correct?

7 A. That is correct.

8 Q. And the operating system on the
9 device is engineered to return that information
10 to the developers who may use the correct code?

11 A. That is correct.

12 Q. And you go on to state that once
13 developers call functionality in the UIKit
14 framework that returns the UDID, the developer
15 can now make use of the UDID as she wishes;
16 correct?

17 A. That is correct.

18 Q. Am I correct that you -- it is
19 impossible to tell by looking at the code in an
20 application how a developer actually uses the
21 UDID?

22 MR. STAMPLEY: Objection.

23 A. Depends on the definition of how
24 uses. In the most general cases, this might
25 boil down to a program understanding, which is

1 are created during application execution that
2 transmission to the Internet happened.

3 Q. So it's your understanding that
4 there would be no artifacts at all of those
5 prior transmissions on a given device?

6 A. In general, I would say that is
7 correct. There might be certain artifacts like
8 the DNS cache, for example, that might contain
9 information. However, from that artifact, it's
10 only possible to deduce that the device or
11 anything on the device communicated with a
12 third party. It doesn't allow you to conclude
13 what application it was.

14 And that would also require that you
15 have access to the device very close to when it
16 happened. So if you give me the device a day
17 later, I don't believe there are any artifacts
18 that are -- that can be used.

19 Q. Do you know whether all advertising
20 networks send the UDID at launch?

21 A. I do not know whether all
22 advertising networks send the UDID at launch.
23 I believe all advertising networks do send an
24 identifier during the retrieval of an ad.

25 Q. But that can take place at various

1 points in an application; correct?

2 A. It is not guaranteed that this
3 happens at launch.

4 Q. So it's possible for a user to open
5 an application and close an application and
6 never trigger the process of a third-party ad
7 network even if the ad network's library is in
8 the app?

9 A. I believe that is correct.

10 Q. So you would need to know how a
11 particular user interacted with an application
12 to know whether or not the UDID may have
13 actually been transmitted during -- by that
14 app?

15 A. Depending on the complexity of the
16 application.

17 MS. BERINGER: Why don't we
18 take a break.

19 THE VIDEOGRAPHER: Going off
20 the record at 12:22 p.m.

21 (Recess was taken for lunch
22 from 12:22 p.m. until 1:11 p.m.)

23 THE VIDEOGRAPHER: This is the
24 start of tape labeled number three of the
25 videotaped deposition of Manuel Egele. The

1 behavioral profiles linked to a UDID?

2 A. I believe a company called Pinch
3 Media used to do that, gathering statistics of
4 what application is used on what device and
5 what time of the day and what button they use
6 to click and so on and so forth. Then I think
7 that company later on got bought by somebody
8 else.

9 Q. Do you know what personal or
10 personally identifiable information, if any,
11 was part of those profiles maintained by Pinch
12 Media?

13 A. I do not have insight into the data
14 stores of Pinch Media.

15 Q. And you would agree that Apple has
16 no way to know whether or not a particular
17 application aggregates UDID with personal
18 information; correct?

19 A. I believe that Apple cannot
20 necessarily tell that because I would believe
21 that, in the general case, that would happen on
22 the server back end, which is out of reach of
23 Apple and everybody outside of the app
24 developer.

25 Q. In paragraph 61 you state, "Apple

1 Other than that, as far as I know,
2 the operation of those APIs are identical
3 across all iOS versions.

4 Q. And am I correct that in every
5 version of iOS that has supported apps' ability
6 to access device location, the iOS would
7 surface a prompt that would alert the user that
8 the app was accessing location and require the
9 user to consent to that before the app could
10 access location?

11 A. That is correct.

12 Q. And are you aware of any instance in
13 which iOS has enabled an app to access a user's
14 location information without consenting to it
15 in this fashion?

16 MR. STAMPLEY: Objection.

17 A. I am aware of the possibility. I
18 cannot state that it actually happened because
19 I didn't observe it. But I believe the
20 CoreLocation framework would store its latest
21 obtained location information in a cache file,
22 which I believe could be accessed by
23 applications.

24 Q. What is that belief based on?

25 A. Based on an application that I was

1 analyzing in conducting my research, something
2 developed by Nicolas Seriot, that would
3 highlight all the information that can be
4 accessed by an application without raising user
5 awareness.

6 Q. Was that in particular iOS versions
7 or in all iOS versions?

8 A. As far as I know, this was not
9 particular to a specific iOS version.

10 Q. And which particular table in the
11 cache are you referring to?

12 A. As far as I understand, we are
13 talking about two different caches here, and I
14 don't know whether the cache file that contains
15 the last updated location was actually a
16 database file.

17 Q. And when you say the last updated
18 location, can you be more precise? What does
19 that mean?

20 A. I believe it's the -- every time the
21 CLLocation, or the CoreLocation framework,
22 obtains an update on location through whatever
23 means, that information is written to the cache
24 file and overrides the last states they're in.

25 Q. And are you aware of any instance of

1 location, approximate location, of the device.

2 Q. And that -- that is not Apple's
3 system; correct?

4 A. Apple, as far as I know, does not
5 provide a system that allows that location
6 resolution based on IPs, yes.

7 Q. And are you aware of any instance in
8 any iOS version where any -- withdrawn.

9 Are you aware of any instance where
10 any iOS version transmitted a user's location
11 information to Apple when Location Services was
12 off?

13 A. I am aware of cases where that used
14 to happen.

15 Q. And can you describe what instances
16 you're aware of where Apple obtained a user's
17 location information when Location Services was
18 off.

19 A. It is my understanding that this
20 used to be the case when the user disabled
21 Location Services and, yet, a third-party
22 application would try to access their location,
23 and then the CoreLocation framework would go
24 and obtain an approximate location from Apple's
25 crowdsource location database to get an

1 approximate location off the phone at the time
2 the request happened.

3 Q. And what is that understanding based
4 on?

5 A. That is based on, again, e-mail
6 discussions that I've seen, and I think
7 Dr. Tribble elaborated on that when he was
8 giving his testimony in front of congressional
9 committee, I think it was, where this was the
10 topic.

11 Q. And aside from reading Dr. Tribble's
12 testimony and the e-mails that you reviewed at
13 Apple, have you performed any independent
14 analysis of whether that could have occurred in
15 any version of iOS?

16 A. I did not conduct any independent
17 experiments to verify that fact.

18 Q. Did you apply any methodology to
19 assess whether or not users' location
20 information may have been transmitted to Apple
21 in certain circumstances when Location Services
22 was off?

23 A. I have not, since I didn't have
24 reason to.

25 Q. Do you know what information

1 A. I heard about it. I don't think I
2 ever used it. Certainly not on an iOS device.

3 Q. Are you familiar with the Yelp app?

4 A. I am familiar with the Yelp app.

5 Q. The Yelp app allows me to do
6 numerous things: I can write a review of the
7 restaurant; I can search for nearby
8 restaurants; or I can see where my friends are
9 checking in. Do you agree?

10 MR. STAMPLEY: Objection.

11 A. I would agree to that.

12 Q. Your control flow graph shows --
13 would show any of these possible actions; is
14 that right?

15 A. That is correct.

16 Q. But a user who opens the Yelp app
17 and only engages in one of those activities
18 might not actually execute everything that
19 would show up on your control flow graph?

20 A. That is correct.

21 Q. So a control flow graph doesn't tell
22 us anything about the way a user interacts with
23 an app. It only tells us all of the possible
24 ways that a user can interact with an app; is
25 that correct?

1 Q. Do they access the UDID at different
2 times?

3 A. I believe so.

4 Q. Would a control flow graph for the
5 AdMob library look different than the control
6 flow graph of the Flurry library?

7 MR. STAMPLEY: Objection.

8 A. I am almost certain that this would
9 be the case, yes.

10 Q. Okay. In Section 6.4, you state
11 that -- I'm going to -- this is on the next
12 page. Above 6.5, in the first full paragraph,
13 about five lines down, you say, "In six
14 applications, even after extensive, manual
15 reverse engineering, we could not find an
16 actual flow." What does that mean?

17 A. Okay. Here. It's in the middle of
18 the paragraph. Basically, it means that, what
19 it says, that we could not confirm manually
20 that there was a flow of privacy-sensitive
21 information in the application.

22 Q. So is it correct to say that even
23 after you run the PiOS program, in some
24 instances, you still need to do some additional
25 analysis to make a determination about whether

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1 COMMONWEALTH OF PENNSYLVANIA) E R R A T A
COUNTY OF ALLEGHENY) S H E E T

2
3 IN RE IPHONE APPLICATION LITIGATION

4 I, DR. MANUEL EGELE, have read the
foregoing pages of my deposition given on
5 January 9, 2013, and wish to make the
following, if any, amendments, additions,
6 deletions or corrections:

7 Pg. No. Line No. Change and reason for change:
8
9
10
11
12
13
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15
16

17 In all other respects the transcript is true
and correct.

18 _____
DR. MANUEL EGELE
19

20 Subscribed and sworn to before me this
_____ day of _____, 2013.
21 _____

22 Notary Public
23
24
25

1 COMMONWEALTH OF PENNSYLVANIA)
2 COUNTY OF ALLEGHENY)

3 I, Michelle L. Hall, a notary public
4 in and for the Commonwealth of Pennsylvania, do
5 hereby certify that the witness, MANUEL EGELE,
6 DR.TECHN., was by me first duly sworn to
7 testify the truth, the whole truth, and nothing
8 but the truth; that the foregoing deposition
9 was taken at the time and place stated herein;
10 and that the said deposition was recorded
11 stenographically by me and then reduced to
12 typewriting under my direction, and constitutes
13 a true record of the testimony given by said
14 witness, all to the best of my skill and
15 ability.

16 I further certify that the inspection,
17 reading and signing of said deposition were not
18 waived by counsel for the respective parties
19 and by the witness and if after 30 days the
20 transcript has not been signed by said witness
21 that the witness received notification and has
22 failed to respond and the deposition may then
23 be used as though signed.

24 I further certify that I am not a
25 relative, or employee of either counsel, and
that I am in no way interested, directly or
indirectly, in this action.

IN WITNESS WHEREOF, I have hereunto
set my hand and affixed my seal of office this
14th day of January, 2013.

S/Michelle L. Hall

